

CHEMISTRY NMDCAT

(UNIT-12)

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SAEED MDCAT TEAM

TOPICS

✓ CHEMISTRY OF HYDROCARBONS

Q.1 For termination reaction in halogenation of alkanes which is/are possible reaction/s.

- a. $\text{CH}_3^\bullet + \text{CH}_3^\bullet$ b. $\text{CH}_3^\bullet + \text{Cl}^\bullet$
c. $\text{CH}_3\text{Cl} + \text{Cl}^\bullet$ d. Both 'a' and 'c'

Q.2 The chlorination of alkane involves the mechanism

- a. β - elimination
b. Nucleophilic substitutions
c. Electrophilic substitution
d. Free radical

Q.3 Which alcohol can easily be dehydrated to give alkene?

- a. Ethanol
b. Isopropyl alcohol
c. t-Butyl alcohol
d. n-Propyl alcohol

Q.4 Vicinal dihalide on treatment with a strong base eliminates two molecules of hydrogen halides from two adjacent carbons to give an _____

- a. Alkane
b. Alkene
c. Arene
d. Alkyne

Q.5 A trans alkene can be obtained by treating an alkyne with _____

- a. Pd (BaSO₄)/Quinoline
b. Zn-Hg/HCl
c. Na/Liquid NH₃, -33°C
d. N₂H₄/KOH, 200°C

Q.6 2-Bromobutane + KOH $\xrightarrow{\text{Alcohol}}$ X + KBr + H₂O. What will be the major product 'X' in given reaction

- a. 1-Butene
b. 2-Butanol
c. 2-Butene
d. Both 'a' and 'b'

Q.7 **Alkene + HX** \longrightarrow ?

In the above reaction which is the possible product

- a. Alkyl halide b. Alcohol
c. Dihalide d. Alkane

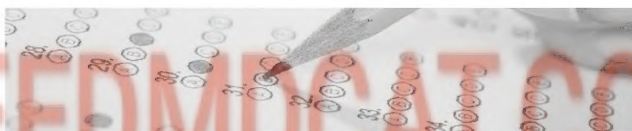
Q.8 Amongst the following the compound that can be most readily sulphonated is

- a. Toluene b. Phenol
c. Aniline d. Benzene

Q.9 The order of reactivity of halogen acids with Alkenes is:

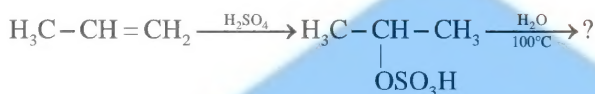
- a. $\text{HI} > \text{HCl} > \text{HBr}$ b. $\text{HI} > \text{HBr} > \text{HCl}$
c. $\text{HCl} > \text{HBr} > \text{HI}$ d. $\text{HCl} > \text{HI} > \text{HBr}$

Q.10 Which of the following reactions proceed via cyclic intermediate formation?



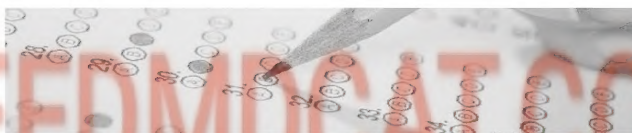
- a. Hydration of alkenes
b. Halogenation of alkenes
c. Hydrohalogenation of alkenes
d. Halogenation of alkanes

Q.11

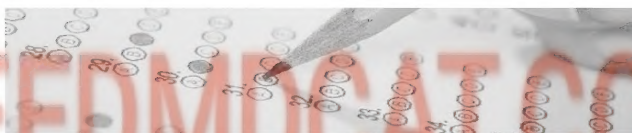


What is final product?

- a. Primary alcohol
b. Tertiary alcohol
c. Secondary alcohol
d. Secondary propyl hydrogen sulphonates
- Q.12** Alkenes cannot undergo which of the following reactions
a. Electrophilic addition
b. Nucleophilic addition
c. Polymerization
d. Oxidation
- Q.13** Catalyst employed in polyethene formation is
a. TiCl_4
b. $\text{TiCl}_4 + (\text{C}_2\text{H}_5)_3\text{Al}$
c. $\text{TiCl}_3 + (\text{C}_2\text{H}_5)_3\text{Al}$
d. $\text{TiCl}_4 + \text{AlCl}_3$
- Q.14** The products of oxidation of 2-butene with cold and hot KMnO_4 are
a. Diol, diol
b. Diol, ketone
c. Diol, carboxylic acids
d. All are possible
- Q.15** Benzene is less reactive than
a. Nitrobenzene
b. Alkene
c. Alkane
d. Benzaldehyde
- Q.16** Ozonides are unstable compounds and are reduced directly by treatment with Zn and H_2O , the reduction product
a. Aldehyde
b. Alcohol
c. Ketone
d. May be aldehyde or ketone
- Q.17** 2, 2-Dichloroethylsulphide is also known as
a. Marsh gas
b. Water gas
c. Mustard gas
d. Natural gas
- Q.18** Markownikovs rule is not followed in reaction between
a. Propene and Br_2
b. Propene and H_2SO_4
c. Propene and HCl
d. Propene and HCN
- Q.19** $1,1, 2,2\text{-tetrabromoethane} + \text{Zn} \longrightarrow \text{X} + \text{ZnBr}_2$
 $\text{X} + \text{Zn} \longrightarrow \text{Y} + \text{ZnBr}_2$
What are "X" and "Y" in above reactions
a. X = Ethene, Y = Ethyne
b. X = 1,2-Dibromoethane, Y = Ethyne
c. X = Ethyne, Y = 1,2-Dibromoethene
d. X = 1,2-Dibromoethene, Y = Ethyne
- Q.20** Acetylene reacts with hydrogen gas in the presence of Ni. Initially an alkene is formed which then takes up another molecule of hydrogen to form _____
a. Ethanol
b. Ethane
c. Vinyl alcohol
d. Acetaldehyde
- Q.21** Delocalized electron cloud in benzene is due to
a. s electrons
b. sp^2 electrons
c. s and p electrons
d. p_z electrons
- Q.22** C-C bond length in benzene is
a. 1.21 \AA
b. 1.34 \AA
c. 1.39 \AA
d. 1.54 \AA



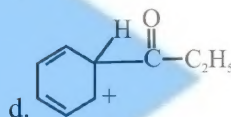
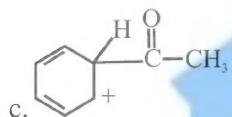
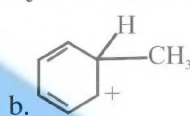
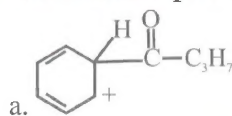
- Q.23** Which of the following species are 3,5(meta) directing groups when second group is introduced into the benzene ring
I = $-\text{NH}_2$ II = $-\text{CHO}$ III = $-\text{COOH}$ IV = $-\text{CH}_3$
a. II, III and IV b. I and IV
c. II and III d. I, II and IV
- Q.24** Which statement is incorrect about benzene
a. Benzene is resonance stabilized
b. All carbons on benzene ring are identical
c. A weak electrophile can attack on benzene ring
d. It cannot decolorize KMnO_4 solution
- Q.25** $\text{HC} \equiv \text{CH} + \text{H}_2\text{O} \xrightarrow[\text{H}_2\text{SO}_4]{\text{HgSO}_4} \text{X} + \text{Y}$, What are "X" and "Y" in given reaction
a. X = Vinyl alcohol, Y = Ethyl alcohol b. X = Vinyl alcohol, Y = Acetone
c. X = Vinyl Alcohol, Y = Acetaldehyde d. X = Acetaldehyde, Y = Vinyl alcohol
- Q.26** For the formation of acetophenone from benzene which reagents are used
a. $\text{AlCl}_3 + \text{CH}_3\text{Cl}$ b. $\text{AlCl}_3 + \text{CHCl}_3$
c. $\text{AlCl}_3 + \text{CH}_3\text{CH}_2\text{COCl}$ d. $\text{AlCl}_3 + \text{CH}_3\text{COCl}$
- Q.27** Active nitrating agent in formation of nitrobenzene is
a. NO b. HNO_3
c. HNO_2 d. NO_2^+
- Q.28** Benzal chloride can be formed by reaction of chlorine with _____ in presence of sunlight
a. Benzene b. O nitrobenzene
c. Toluene d. Benzoic acid
- Q.29** Which product is formed in the given reaction
 $\text{C}_6\text{H}_6 + \text{CH}_3\text{-CH}_2\text{-Cl} \xrightarrow{\text{AlCl}_3} ?$
a. Aniline b. Isopropyl benzene
c. Toluene d. Ethyl benzene
- Q.30** Which of the following carbon atom of a terminal alkyne pulls the electrons more strongly making the attached hydrogen atom slightly acidic?
a. sp^3 -hybridized b. sp^2 -hybridized
c. sp -hybridized d. dsp^2 -hybridized
- Q.31** Under ordinary conditions alkanes are inert towards:
a. Acids b. Alkalies
c. Oxidizing agents d. All of these
- Q.32** Combustion of alkanes in limited supply of air produces
a. CO_2 and H_2O b. H_2O and CO
c. CO, CO_2 and H_2O d. CO, C and H_2O
- Q.33** Catalytic oxidation of alkane in the presence of Cu, $400^\circ\text{C}/200 \text{ atm}$, yield the product
a. Alcohol b. Ketone
c. Aldehyde d. Carboxylic acid
- Q.34** Which will react with methane at slowest rate
a. Fluorine b. Bromine
c. Iodine d. Chlorine
- Q.35** The reaction of benzene with bromine in the presence of FeBr_3 follows the mechanism of _____ reaction
a. Electrophilic addition b. Electrophilic substitution



c. Nucleophilic substitution

d. Nucleophilic addition

Q.36 Intermediate product formed when propanoyl chloride reacts with benzene is



Q.37 Which one of the following acts as an electrophile in the electrophilic substitution of benzene with chlorine

a. Cl^+

b. FeCl_4^-

c. Fe^{+3}

d. Cl^-

Q.38 Toluene $+ 3[\text{O}] \xrightarrow{?}$ Benzoic acid $+ \text{H}_2\text{O}$, Which of the following reagents are used for given reaction

a. $\text{LiAlH}_4, \text{H}_2\text{SO}_4$

b. NaOH, I_2

c. $\text{KMnO}_4, \text{H}_2\text{SO}_4$

d. $\text{HNO}_3, \text{H}_2\text{SO}_4$

Q.39 Benzene is reduced to which compound at high temperature with hydrogen in the presence of Ni as a catalyst

a. Phenol

b. Cyclopentane

c. Toluene

d. Cyclohexane

Q.40 Which solvent is used for hydrogenation of benzene in the presence of Pt as a catalyst

a. Water

b. Ether

c. Acetic acid

d. Ethanol

Q.41 Nitration of nitrobenzene will yield

a. 1,2 dinitrobenzene

b. 1,3 dinitrobenzene

c. 1,4 trinitrobenzene

d. All of these

Q.42 Acylation of which one is easier

a. Benzene

b. Nitrobenzene

c. Benzoic acid

d. Chlorobenzene

Q.43 Which of the followings is ortho para directing group?

a. $-\text{CCl}_3$

b. $-\text{NO}_2$

c. $-\text{NH}_2$

d. $-\text{CN}$

Q.44 When toluene is treated with $\text{HNO}_3 + \text{H}_2\text{SO}_4$ at 100°C , the product will be

a. Picric acid

b. 1,3-Dinitro benzene

c. 2,4,6-Trinitro toluene

d. Both A and B

Q.45 When hydrogen atom is removed from toluene, group left is called?

a. Alkyl Group

b. Phenyl Group

c. Benzyl Group

d. Methyl Group

Q.46 Addition of unsymmetrical reagent to an unsymmetrical alkene is governed by

a. Cannizzaro's reaction

b. Kolbe's reaction

c. Aldol reaction

d. Markownikov's rule

Q.47 Alkene is mixed with oxygen or air and passed over Ag_2O catalyst at high temperature and pressure to form

a. Alcohol

b. Aldehyde

c. Epoxide

d. Ozonide

Q.48 Benzene cannot undergo

a. Substitution reaction

b. Addition reaction

c. Oxidation reaction

d. Elimination reaction

Q.49 The alkene on treatment with halogen in an inert solvent like Carbon tetrachloride at room temperature gives _____



- a. Alkyl halide
c. Vicinal dihalide
b. Geminal dihalide
d. Vinyl halide

Q.50 Ethyl benzene + 6[O] $\xrightarrow[\text{H}_2\text{SO}_4]{\text{K}_2\text{Cr}_2\text{O}_7}$ X + Y + Z, What are X, Y and Z in given reaction

- a. X = Picric acid, Y = Water, Z = Carbon dioxide
b. X = Benzoic acid, Y = Hydrogen, Z = Carbon dioxide
c. X = Benzoic acid, Y = Water, Z = Carbon dioxide
d. X = Phthalic acid, Y = Water, Z = Carbon dioxide

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Chem T-12

Chemistry # alkanes, alkenes, alkynes, Benzene

01- d	11- c	21- d	31- d	41- b
02- d	12- b	22- c	32- d	42- a
03- c	13- d B	23- c	33- d	43- c
04- d	14- c	24- c	34- c	44- c
05- c	15- b	25- c	35- b	45- c
06- c	16- d	26- d	36- d	46- d
07- a	17- c	27- d	37- a	47- c
08- c	18- a	28- c	38- c	48- d
09- b	19- d	29- d	39- d	49- c
10- b	20- b	30- c	40- c	50- c

ACK

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